

1999 PROGRESS REPORT TO THE NEW YORK STATE INTEGRATED PEST MANAGEMENT PROGRAM

Title: Assessing planting date, biological control, and host plant resistance for management of corn leaf aphid.

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ABSTRACT

The corn leaf aphid, *Rhopalosiphum maidis*, is an important pest of fresh market sweet corn in New York. Heavy infestations can reduce yield and adversely affect ear quality by direct or indirect (sooty mold) contamination. Corn leaf aphids also transmit maize dwarf mosaic and barley yellow dwarf virus. Over the past few years there have been reports of problems with corn leaf aphid infestations and of poor control with available insecticides. Biological control is one of the fundamental components of IPM and offer good prospects for the suppression of corn leaf aphid populations in a sweet corn system.

To improve the management of this pest we assessed corn leaf aphid infestations and the associated natural enemy complex in early-, mid-, and late- season plantings of sweet corn. We recorded relatively large numbers of natural enemies, but it was insufficient to keep aphid numbers below action thresholds. Coccinellid counts from yellow sticky cards were not good indicators of coccinellid numbers on corn plants. An evaluation of corn breeding lines indicated that lines resistant to European corn borer may possess resistance to corn leaf aphids.

OBJECTIVES

1. Evaluate the influence of planting date on aphid and predator populations.
2. Evaluate the correlation between sticky card captures and plant counts of coccinellids.
3. Evaluate experimental breeding lines of sweet corn for resistance to corn leaf aphid.

BACKGROUND AND JUSTIFICATION

About 63,000 acres of sweet corn are grown in New York each year (Anonymous 1997) and 40 percent of this is fresh market sweet corn, making New York the second largest producer in the US. The corn leaf aphid, *Rhopalosiphum maidis*, can cause considerable damage to sweet corn because of large and rapid population increases. Yield loss is a function of aphid density as well as duration of feeding time on the plant, plus soil moisture (Rice 1994). Feeding by corn leaf aphid hinders tassel development and predisposes corn plants to the sooty mold fungus. Corn leaf aphid is also known to vector maize dwarf mosaic and barley yellow dwarf virus. In New York, corn leaf aphids infest fields by mid-June and early-July and increase to very high numbers late in the season (Straub and Boothroyd 1980). Presently, once infestations reach problem levels insecticides are applied for control. However, it may be difficult to control infestations with insecticides, and there is some indication that these sprays may actually aggravate corn leaf aphid problems by killing natural enemies. Very little information is available on basic IPM tactics to manage this pest. The current action threshold, which is not research based, is to treat if 50% of the plants have 50 or more aphids per emerging tassel (Cornell Recommendations, 1998).

Observations suggest that several predators and parasites are associated with corn leaf aphid, but documented evidence and data to support their relative effectiveness are lacking. Among the predators identified are various species of ladybeetles, *Orius insidiosus*,

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